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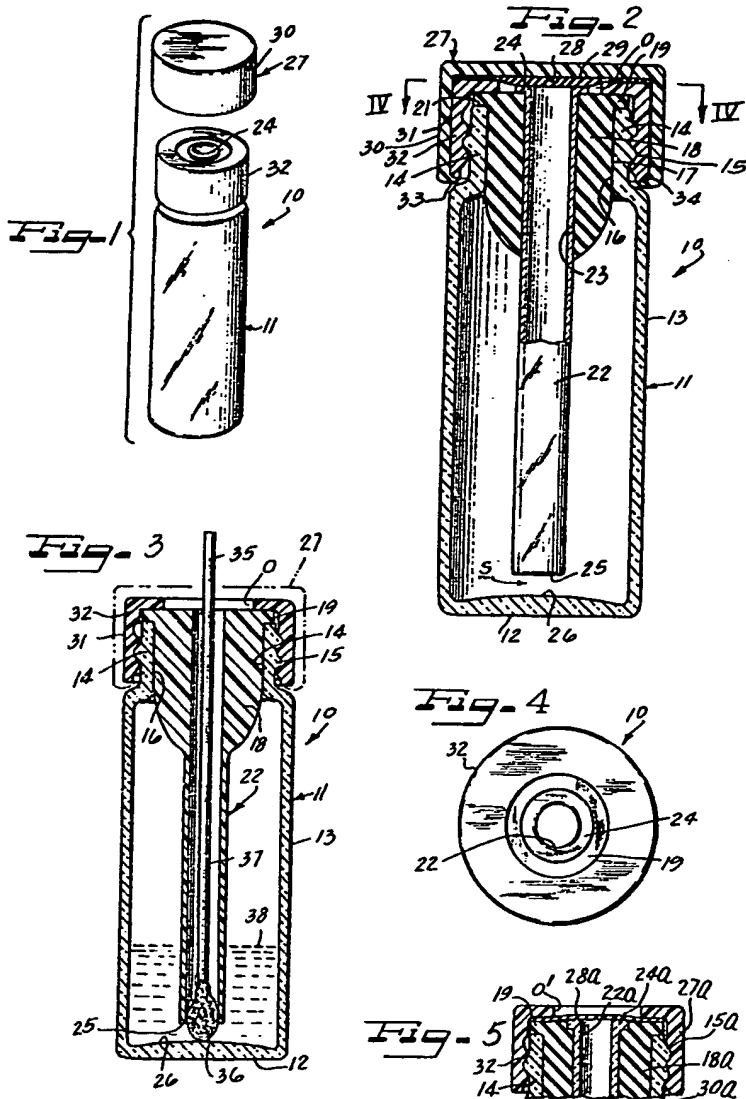
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1485581

COMPLETE SPECIFICATION

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PATENT SPECIFICATION

(11)

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- (21) Application No. 106/75 (22) Filed 2 Jan. 1975
 (31) Convention Application No. 429 889 (32) Filed 2 Jan. 1974 in
 (33) United States of America (US)
 (44) Complete Specification published 14 Sept. 1977
 (51) INT. CL.² B65D 23/00 // 51/24
 (52) Index at acceptance
 B8D 11 7G 7P1 7PY



(54) IMPROVEMENTS IN OR RELATING TO LIQUID

(71) We, JOHN THOMAS BEUTLICH and FRED WILLIAM BEUTLICH, both citizens of United States of America, of 2915 West Coyle Street, Chicago, Illinois, United States of America, and 1704 Cranshire Court, Deerfield, Illinois 60015, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

Our invention relates to an improved non-spillable dispenser for the dispensing of a liquid therefrom by the use of a conventional applicator, such as a cotton swab. Where, as heretofore, such dispensing involved the use of liquid containers such as open bottles, there was a real likelihood of the open bottle being tipped over in use and spilling its contents due to carelessness in handling the applicator. Our present invention greatly reduces the likelihood of such spillage without making the act of dispensing the liquid any more difficult.

Thus, there is provided in accordance with the invention, a non-spillable liquid dispenser comprising a liquid-filled container having, when regarded in a normal upright position, an upper neck portion, a tube located within the container and open at both ends, a resilient sleeve sealingly fitted into said neck portion to leave the upper end of said tube open and accessible to an applicator and to position the lower open end of said tube slightly above the bottom of said container, and removable means retaining the resilient sleeve in sealing relationship with the upper neck portion and having an opening therethrough to permit an applicator to be passed through the tube and to be dipped into the liquid contained in the container, the arrangement being such that any void above the liquid is sealed from the atmosphere outside the container

by seals formed by the resilient sleeve and between the liquid and the lower end of the tube to prevent spillage of the liquid from the container when the dispenser is tipped so that it would otherwise spill its liquid contents.

Other objects, features and advantages of the invention will be readily apparent from the following description of preferred embodiments thereof, taken in conjunction with the accompanying drawing and by way of example.

In the drawing:

Fig. 1 is an exploded elevational view of a liquid dispenser;

Fig. 2 is a vertical sectional view of the dispenser shown in Fig. 1;

Fig. 3 is a vertical sectional view of a modified form of dispenser illustrating its use with a conventional cotton swab;

Fig. 4 is a plan view taken substantially along the line IV-IV of Fig. 2, with an outer liquid-impermeable closure removed; and

Fig. 5 is a fragmentary vertical sectional view of a further modification of the dispenser in which a disc-like gasket is used to close the otherwise open end of the dispenser.

The reference numeral 10 indicates generally a non-spillable liquid dispenser. In Figs. 1, 2 and 4, the dispenser 10 comprises a container 11 which is preferably made of glass or of non-breakable synthetic plastics or resinous material and may suitably be formed integrally with a flat bottom wall 12, a cylindrical side wall 13 and an upper neck portion 14 which has a reduced diameter with respect to the cylindrical side wall 13 and is preferably provided with external threads 15.

As shown in Fig. 2, the reduced diameter neck portion 14 has an inner cylindrical surface 16 for receiving a cylindrical portion 17 of a soft, resilient sleeve, or bushing 18. The bushing 18 is provided with an upper

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(54) IMPROVEMENTS IN OR RELATING TO LIQUID

ERRATUM

SPECIFICATION NO 1485581

Page 1, Heading (54) *after* LIQUID *insert* DISPENSERS

THE PATENT OFFICE
 21 March 1978

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in naming the applicator. Our present invention greatly reduces the likelihood of such spillage without making the act of dispensing the liquid any more difficult.

25 Thus, there is provided in accordance with the invention, a non-spillable liquid dispenser comprising a liquid-filled container having, when regarded in a normal upright
 30 position, an upper neck portion, a tube located within the container and open at both ends, a resilient sleeve sealingly fitted into said neck portion to leave the upper end of said tube open and accessible to an
 35 applicator and to position the lower open end of said tube slightly above the bottom of said container, and removable means retaining the resilient sleeve in sealing relationship with the upper neck portion and
 40 having an opening therethrough to permit an applicator to be passed through the tube and to be dipped into the liquid contained in the container, the arrangement being
 45 such that any void above the liquid is sealed from the atmosphere outside the container

along the line IV-IV of Fig. 2, with an outer liquid-impermeable closure removed; and

Fig. 5 is a fragmentary vertical sectional view of a further modification of the dispenser in which a disc-like gasket is used to close the otherwise open end of the dispenser.

The reference numeral 10 indicates generally a non-spillable liquid dispenser. In Figs. 1, 2 and 4, the dispenser 10 comprises a container 11 which is preferably made of glass or of non-breakable synthetic plastics or resinous material and may suitably be formed integrally with a flat bottom wall 12, a cylindrical side wall 13 and an upper neck portion 14 which has a reduced diameter with respect to the cylindrical side wall 13 and is preferably provided with external threads 15.

As shown in Fig. 2, the reduced diameter neck portion 14 has an inner cylindrical surface 16 for receiving a cylindrical portion 17 of a soft, resilient sleeve, or bushing 18. The bushing 18 is provided with an upper

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flange 19 that extends radially over and rests against the upper edge 21 of the neck portion 14. A small diameter tube 22 extends through the bore 23 of the bushing 18 and is of such external diameter as to fit snugly within the bore 23 and is additionally held against longitudinal movement with respect to the bore by the provision of an upper radial extending flange 24 on the tube 22. The length of the tube 22 is such as to terminate in a lower open end 25 that is spaced, as by the space *S*, slightly above the inner bottom surface 26 of the container 11. The purpose of the spacing *S* between the lower open end 25 of the tube 22 and the inner surface 26 of the bottom wall 12 of the container will be explained in greater detail hereinafter.

An outermost closure or cap 27 provides a liquid impermeable closure for the upper end of the container 11. As shown in Fig. 2, the outermost closure 27 may be provided with a soft, resilient disc 28 that may be either adhesively attached to the inner surface 29 of the closure or cap 27 or may be separate therefrom for insertion between the inner surface 29 and the upper flange 24 of the tube 22.

The outer, liquid impermeable closure or cap 27, which may be formed of a synthetic resinous or plastics material, has a dependent cylindrical wall portion 30 of such a diameter as to provide a close fit with the outer surface 31 of a removable inner retaining member 32. The outer closure or cap 27, as shown in Fig. 2, has a slightly intumed lower edge 33 having sufficient resiliency to permit this outer closure or cap to be slipped over the inner retaining member 32 until the edge 33 is snapped into place against the lower edge of the inner retaining member, as shown at 34. In order to provide the necessary resiliency of the edge 33, the outer closure or cap 27 is made of a resilient plastics or resinous material. The resiliency of the intumed edge 33 also permits the ready separation of the outer closure or cap 27 by an upward pull thereon, thereby exposing the flanged upper end 24 of the tube 22 while leaving the inner member 32 still threaded on the threaded neck portion 14 of the container 11 to retain the resilient sleeve or bushing 18 in sealing relationship with the upper neck portion 14.

Fig. 3 shows a slight modification of the dispenser illustrated in Fig. 2, but more importantly, illustrates the use of a swab 35 with said dispenser 10. The swab 35 is a conventional cotton swab having a swab of cotton 36 at one end of a stick 37 which is usually formed of wood or a synthetic plastics material. The length of the stick 37 is such that the cotton swab 36 can be inserted into and along the length of the

tube 22 to reach the bottom wall 12 of the container 11 and thereby be dipped into any liquid 38 that is to be dispensed from the container 11.

In Fig. 3, instead of making the tube 22 and the resilient sleeve or bushing 18 separate and maintained in fixed relationship by the snug fit between the two, the tube 22 and the sleeve or bushing 18 are formed integrally of a suitably soft and resilient plastics material that is preferably capable of being formed by moulding, such as injection moulding. Except for the tube 22 and bushing 18 being formed integrally, the dispenser illustrated in Fig. 3 is substantially the same as that illustrated in Fig. 2 and already described. In Fig. 3, the outer liquid impermeable closure or cap 27 is shown in dotted lines.

With the outer closure or cap 27 removed, leaving the flanged end 24 of the tube 22 open, the dispenser 10 is nevertheless substantially non-spillable. This is because the liquid 38 in the space *S* provides a seal for the lower end 25 of the tube 22 and since the sleeve or bushing 18 provides an airtight seal with the container neck portion 14 and the tube, there is substantially no tendency for the liquid to escape from the container 11. Since the upper end of the container 11 is sealed by the resilient sleeve or bushing 18 retained in position by the inner retaining member 32, there is no leakage of the liquid 38 around the outside of the tube 22 whether this tube be integral with or separate from the sleeve or bushing 18. When the dispenser 10 is in a horizontal or tipped-over position, any spillage or leakage of the liquid 38 from the open end of the tube 22 is resisted by the atmospheric pressure that is exerted against the surface of any liquid 38 that may tend to enter the open, normally lower, end 25 of the tube 22.

When the dispenser 10 is in the upright position, as shown in Fig. 2 or 3, without the outermost closure or cap 27 in position to close the tube 22, there is still no tendency for the liquid 38 to spill or leak. With the outer closure or cap 27 removed, the upper open end of the tube 22 is exposed to permit the insertion therein and withdrawal therefrom of an applicator, such as the conventional applicator 35 illustrated in Fig. 3.

On the other hand, if the dispenser 10, after being filled, is to be kept in storage or is to be shipped, it should be closed by the outermost closure or cap 27, as illustrated in Fig. 2 and in phantom in Fig. 3. When so closed, the liquid 38 in the container 11 is held tightly confined and prevented from loss by spillage, evaporation or other cause. Even though the liquid 38 may be a relatively volatile liquid, it is

unlikely to spill out or be lost by reason of evaporation, since the outer impermeable closure or cap 27 ensures a liquid and vapour-tight seal of the co-operating parts of the dispenser 10 upon the intumed edge 33 of the outer closure or cap being snapped into place.

In the modification shown in Fig. 5, a liquid impervious disc-like sealing member 28a overlies and seals against an upper flanged end 24a of a tube 22a. The sealing member 28a is separate from a closure 27a but is so closely fitted into this closure 27a as to be normally carried thereby to seal the upper end of the tube 22a and also a central opening O' in the closure 27a. The closure 27a, unlike the outermost closure or cap 27 of Figs. 1 and 2, has a central opening O' and also constitutes the inner retaining member 32 of the embodiments shown in Figs. 1 to 4. Also the closure 27a has no intumed lower edge, such as the intumed lower edge 33, but has simply a straight cylindrical inner threaded wall 30a for threaded engagement with external threads 15a of the container neck portion 14, as does the inner retaining member 32 in Figs. 2 and 3.

WHAT WE CLAIM IS:—

1. A non-spillable liquid dispenser comprising a liquid-filled container having, when regarded in a normal upright position, an upper neck portion, a tube located within the container and open at both ends, a resilient sleeve sealingly fitted into said neck portion to leave the upper end of said tube open and accessible to an applicator and to position the lower open end of said tube slightly above the bottom of said container, and removable means retaining the resilient sleeve in sealing relationship with the upper neck portion and having an opening there-

through to permit an applicator to be passed through the tube and to be dipped into the liquid contained in the container, the arrangement being such that any void above the liquid is sealed from the atmosphere outside the container by seals formed by the resilient sleeve and between the liquid and the lower end of the tube to prevent spillage of the liquid from the container when the dispenser is tipped so that it would otherwise spill its liquid contents.

2. A dispenser as claimed in claim 1, wherein the resilient sleeve has a flange at its upper end overlying the upper end of the neck portion and resting thereagainst.

3. A dispenser as claimed in claim 1 or 2, wherein said removable retaining means is internally threaded and the neck portion is correspondingly threaded for mutual engagement of the two threads.

4. A dispenser as claimed in claim 3, wherein a liquid-impermeable sealing member is located between the retaining member and the upper end of the resilient sleeve to seal the upper end of said tube during storage and shipment of the dispenser.

5. A non-spillable liquid dispenser as claimed in claim 1 and substantially as hereinbefore described with reference to Figures 1, 2 and 4 or Figures 3 or 5 of the accompanying drawings.

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